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Tied to Tech: The Connection Between Personality Traits and Nomophobia

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ABSTRACT

The formation of mobile information and communication technology, particularly smartphones, has significantly influenced human contact, employment, education, entertainment, and lifestyle during the past decade. Despite the clear advantages of smartphones, the worries related to their usage are increasingly worrisome for end users, parents, educators, professionals, and researchers. A significant issue that has lately arisen is nomophobia, characterised as the anxiety of being unable to access or utilise one's smartphone. This study investigates the prevalence of nomophobia among smartphone users and how Big Five Personality traits influence nomophobia behaviour. A total of 244 smartphone users were surveyed utilising the purposive sampling technique. Nomophobia the Scale and the Big Five Inventory served as devices for data collecting. A multiple regression analysis was performed to ascertain whether the big five personality traits forecast the degree of nomophobia. The data were analysed via IBM SPSS version 28. The results indicated that most smartphone users in the Klang Valley, Malaysia, had moderate levels of nomophobia. The regression analysis results demonstrated that all research variables (extroversion, openness to experience, awareness, agreeableness, and conscientiousness) showed a significant correlation with nomophobia. The study concluded with several limitations regarding sample size and diversity, self-reporting bias and lack of qualitative information. This study may be further up by looking from another perspective, including longitudinal data, environmental context and other intervention variables.

INTRODUCTION

Smartphones are becoming essential in daily life since it conveniently enable entertainment, knowledge access, and communication. Excessive smartphone usage may result in adverse effects, such as nomophobia—the anxiety associated with the absence of a mobile device. Nomophobia is defined as the anxiety or discomfort experienced when one is unable to maintain mobile phone connectivity, representing

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the fear of being without a mobile phone (Yildirim et al., 2016). The emergence of nomophobia is intricately linked to the evolving utilisation of technology. The issue extends beyond mere disconnection; it is also associated with increasing reliance on social media and the internet for maintaining connections and remaining informed. The rise of nomophobia is closely tied to the changing ways we use technology. With smartphones now offering a range of functions, especially for younger generations, there is increasing anxiety around missing out on essential updates and social interactions. The constant presence of a smartphone provides comfort and convenience, so being without it can become a significant source of stress. Al-Mamun et al. (2023) found that the prevalence of nomophobia ranges widely, from 13% to 79%, while Wheelwright (2022) noted that over 65% of people sleep with their phones.

An individual with nomophobia is obsessed with having a mobile phone that is always full of battery/or carrying a charger (Moreno-Guerrero et al., 2020). They are also marked by anxiety at the mere prospect of losing coverage or depleting their data plan. Other symptoms include incessantly checking the device for messages and staying informed about social networks and contacts. Chhabra et al. (2020) found that individuals with high levels of nomophobia spend more time on their phones, feel anxious and nervous when unavailable, and frequently check their screens for messages and calls. Excessive usage can lead to several psychological concerns, such as diminished self-esteem and an extroverted disposition. Other mental illnesses, such as social phobia, anxiety, and panic disorder, might exacerbate nomophobia symptoms.

Nomophobia was found to be associated with various smartphone-related factors, including duration of use, frequency of smartphone checks, incoming and sending calls and messages, and immediate smartphone engagement upon waking (Al-Mamun et al., 2023). Nomophobia is linked with various sociodemographic characteristics, and some studies have highlighted gender differences, reporting mixed results (Yildiz, 2019). The impacts of age are inconsistent since some studies indicate that elevated nomophobia scores are associated with younger generations. (Rodríguez-García, 2020).

Nonetheless, limited research exists on personality traits related to problematic and addictive substance use, or nomophobia (Olivencia-Carrión et al., 2018). The role of personality traits in nomophobia remains limited, and which components should be considered in personality classification. Previous research has demonstrated that social isolation, anxiety, melancholy, and insomnia are among the behavioural symptoms or disorders linked to the overuse of technology and the isolation caused by the pandemic (Aydin & Kus, 2023). Researchers commonly employ the Big Five Personality Model to predict smartphone use-related concerns due to its widespread acceptance and validation (Yoğurtçu, 2018). Research has focused on personality traits as a predictor of problematic smartphone usage behaviours due to their impact on interpersonal interactions (Akhoroz, 2019).

In sum, assessing the incidence of nomophobia is crucial, as it constitutes a worldwide issue. This study aims to examine nomophobia's prevalence and determine its prevalence based on individual personality traits. Specifically, the study seeks to determine:

(i) To assess the prevalence of nomophobia among smartphone users

(ii) To examine the differences in nomophobia levels according to sociodemographic and usage behaviours.

(iii) To examine the relationship between personality traits and nomophobia.

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LITERATURE REVIEWS

Big Five Personalities traits

Many researchers applied the Big Five Personality Model from the psychological predictors of smartphones on use-related issues since the model is well-validated and widely accepted (Yoğurtçu, 2018). Personality factors were anticipated to be connected with nomophobia since personality is a psychological predictor of mobile phone usage and problematic mobile phone use, and nomophobia occurs due to mobile phone use. Recent studies have expanded on how these traits influence nomophobia behaviour. For instance, Sun et al. (2022) proposed that attachment and loneliness are mediated by neuroticism and nomophobia. Meanwhile, Chhabra et (2020) confirmed that individuals with extraversion have a high level of nomophobia compared to other personalities.

Extroversion

Extroversion is the characteristic of being extroverted and focusing attention externally rather than on oneself. This personality type is characterised by sociability, assertiveness, talkativeness, and excitability. Extroverts possess a strong capacity for interpersonal connection and are highly regarded within their teams and organisations. They forge rapid and effortless friendships, and their extroverted dispositions enable effective group collaboration. They can rapidly form intimate connections with individuals, effortlessly cultivate friendships with several people, exhibit straightforwardness and charisma, speak effectively with diverse people, and thrive in collaborative settings. Manner and Lane (2018) posited that extraversion impacted the correlation between subjective norms and technological usage intentions. Yoğurtçu (2018) and Dal and Korkmaz (2020) indicated a positive and substantial correlation between the Extraversion subscale and the level of nomophobia. The relationship is especially crucial for people exhibiting higher levels of Extraversion, as extraverted individuals allocate more time to texting. Following the examination of the literature, the subsequent hypothesis is posited:

H_1: There is a positive relationship between extraversion and nomophobia.

Openness to experience

Individuals exhibiting a high degree of openness are more receptive to novel concepts, experiences, and endeavours. They possess an open-minded disposition, exhibit curiosity towards new products, and actively pursue novelty. They are attracted to novel experiences, adventures, and artistic endeavours. They excel at synthesising and interrelating diverse concepts and ideas. Conversely, individuals exhibiting a low degree of openness pursue routines, traditions, and comfort. They exhibit reluctance to embrace novelty and desire stability. Individuals exhibiting low degrees of openness are typically regarded as rigid and narrow-minded. Openness to experience subscale was negatively and significantly correlated with the nomophobia level, according to Yoğurtçu (2018) in their previous study. It is hypothesised that:

H_2: There is a positive relationship between openness to experience and nomophobia.

Neuroticism

Neuroticism is a personality trait characterised by negative emotions, including anger, anxiety, self-consciousness, irritability, emotional instability, and despair. Individuals exhibiting elevated neuroticism struggle to manage environmental stress, and perceive trivial setbacks as overwhelmingly distressing. Manner and Lane (2018) assert that individuals with neurotic personalities tend to see technological breakthroughs in their workplace as intimidating and unpleasant, often exhibiting predominantly negative cognitive patterns regarding such innovations. Neurotic individuals who engage in text messaging have stronger tendencies towards mobile phone addiction. Individuals exhibiting elevated levels of neuroticism demonstrate characteristics including a predisposition to negative emotional states such as anxiety or irritability, diminished emotional stability, self-doubt, self-consciousness or shyness, sadness, moodiness,

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depression, heightened susceptibility to stress, inadequate stress management, and pronounced fluctuations in their emotional state. Yoğurtçu (2018) found a positive and substantial correlation between the Neuroticism subscale and the level of nomophobia.

H_3: There is a positive relationship between neuroticism and nomophobia.

Agreeableness

Individuals exhibiting a high degree of agreeableness are generally more cooperative, whereas those with a low degree are sometimes more competitive and occasionally manipulative. Agreeableness is characterised by trust, straightforwardness, altruism, obedience, modesty, tender-mindedness, and sociability (Akhoroz, 2019). Several studies have explored agreeableness as a predictor of problematic smartphone user behaviour. According to Uguz and Bacaksiz (2022), there is a positive relationship between Agreeableness and Nomophobia. Thus, it is postulated that:

H_4: There is a positive relationship between agreeableness and nomophobia.

Conscientiousness

Conscientiousness denotes organised, diligent, meticulous, and self-disciplined people effectively managing their impulses and pursuing their objectives. According to Yoğurtçu (2018), unconscientious individuals are regarded as disorganised, impulsive, and prone to procrastination. In limited studies, conscientiousness has been examined to predict problematic smartphone use behaviour. Uguz and Bacaksiz (2022) identified positive correlations between Conscientiousness and Nomophobia. Consequently, it is posited that:

H_5: There is a positive relationship between conscientiousness and nomophobia.

METHODOLOGY

The research employed a self-administered questionnaire (online survey) using scale items sourced from established literature. It employed a positivist methodology, utilising statistical techniques to examine the correlations among variables. A cross-sectional design was selected to collect data from a population sample. A purposive sampling approach was used to determine the sample respondents comprises smartphone users restricted to Klang Valley residents in Malaysia. This location was chosen over others in Malaysia because Klang Valley was the first area to implement 5G networks, as reported by The Malaysian Communications and Multimedia Commission in 2021, and is recognised as a rapidly developing economic hub due to its higher population density compared to other states (Yu & Aun, 2019). The Klang Valley is a significant metropolitan area that comprises Selangor, Putrajaya, and Kuala Lumpur, where this research is conducted. A filter question was added in the questionnaire to identify the sample residents.

A quantitative study was considered suitable for this research because of its benefits in generalising findings, facilitating hypothesis testing, and producing data that are relatively independent of the researcher. To estimate the minimum sample size required, and a G*Power analysis was performed. The sample size was computed using the F test with multiple linear regression and a fixed model R^2 departure from zero in G*Power. With an assumed data error of 0.05, a power of 0.95, and a maximum of five predictors, the findings suggest that a minimum sample size of 138 respondents is required for this investigation.

Measures

To evaluate nomophobia, participants filled out the Nomophobia Questionnaire (NMP-Q) (Yildirim & Correia, 2015). The questionnaire comprises 20 items that investigate four factors: Not being able to access information (six items), Losing connectedness (five items), Not being able to access information (four

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items), and Giving up convenience (five items). The total score spans from 20 to 40, with the following interpretations: a score of 20 indicates no nomophobia, a score between 21 and 59 signifies mild nomophobia, a score ranging from 60 to 99 denotes average nomophobia, and a score from 100 to 140 reflects severe nomophobia. The nomophobia scale demonstrated reliability in this study, as evidenced by a Cronbach's α of 0.936.

The instrument employed to assess personality traits was developed by John, Donahue, and Kentle (1991) and comprises five subscales: openness, conscientiousness, extraversion, neuroticism, and agreeableness. The response pattern is in a 5-point rating ranging from 1 = strongly disagree to 5 = strongly agree. The Cronbach's α for the overall scale and the four subscales are 0.754, 0.689, 0.688, 0.873 and 0.834, respectively.

A pretest was performed before data collection to verify that potential respondents could comprehend and utilise the questionnaire. This study addresses expert pretesting and debrifing interviewing among the potential respondents. This pretest used six content specialists to validate its measurement of the intended variables. Additionally, a debriefing interview was conducted with participants of the research population following the completion of the questionnaire to verify its reliability, quality, and readability. The researcher revised the questionnaire and evaluated their validity using this direct, in-person assessment method.

Data Preparation

A comprehensive data cleansing must be conducted before the researchers analyse data. This ensures that the data input is precise and satisfies all essential conditions. The procedures encompassed examining missing values in the data collection, evaluating normalcy assessments, and conducting additional requisite analysis. The data cleaning entails executing straight-line identification, rectifying blank responses, detecting outliers, and assessing normality. SPSS was employed to eliminate outliers and ensure data entry accuracy. Nine outlier cases were identified and eliminated. The present sample size (N) is 224.

Sample Profiles

The cohort consisted of Table 1, which shows the study participants' profiles. The findings showed that 55.4% (124 respondents) were female and 44.6% (100) were male. This shows that women dominated this study. Regarding age group distribution, the descriptive analysis shows that 5.0% (10 respondents) were under 20, 22.3% (50 respondents) were 20–29, 36.6% (82 respondents) were 30-30 years old, 21.5% (48 respondents) were 40-49, and 34 (15.2%) were 50-59. 54.0% of respondents (121) were single. 45.1% were married (101), and 0.9% were others (2). The table also shows that 32.7% (71 respondents) of respondents had diplomas, the highest academic qualification. A bachelor's degree was the second most common at 28.6% (64 respondents), followed by SPM at 21.0% (47 respondents), master's at 17.9% (40 respondents), and PhD at 0.9% (two respondents).

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Table 1. Respondent profiles

	N	Percentage (%)
Gender		
Male	124	55.4%
Female	100	44.6%
Age		
Less than 20 years old	10	4.50%
20 – 29 years old	50	22.3%
30 – 39 years old	82	36.6%
40 – 49 years old	48	21.4%
50 – 59 years old	34	15.2%
Marital Status		
Single	121	54.0%
Married	101	45.1%
Others	2	0.90%
Highest level of education		
SPM	47	21.0%
Diploma	71	31.7%
Bachelor's Degree	64	28.6%
Master's Degree	40	17.9%
Doctoral Degree	2	0.9%

FINDINGS

Smartphone usage

Discussing the current usage of smartphone usage, as seen in Table 2, most of the respondents, 44.2% (99 individuals), owned a smartphone for over ten years. This was followed by 26.8% (60 individuals) who owned a smartphone for five to 10 years, 21.9% (49 individuals) for four to five years, and the lowest percentage, 7.1% (16 individuals), who owned a smartphone for one to three years.

Additionally, 45.1% of respondents (101 individuals) use a smartphone for more than seven hours daily, while 25.4% (57 individuals) use a smartphone for four to seven hours daily. Furthermore, 21.0% (47 people) indicate utilising a smartphone for 14 hours each day, whereas 8.5% of respondents claim to spend less than one hour on daily smartphone usage (19 respondents).

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Table 2. Smartphone usage

	N	Percentage (%)
Smartphone ownership		
1-3 years	16	7.1%
4-5 years	49	21.9%
5-10 years	60	26.8%
4-5 years	99	44.2%
Hour/s spend in using a smartphone daily		
Less than 1 hour	19	8.50%
1-4 hours	47	21.0%
5-7 hours	57	25.4%
More than 7 hours	101	45.1%

Notably, the predominant portion of respondents engaged with social media, utilised by 37.5% (84 respondents), followed by games at 22.8% (51 respondents) and news at 17.0% (38 respondents). Simultaneously, 10.7% (24 respondents) used music applications as the predominant application, while email applications accounted for 5.4% (12 respondents), study applications comprised 4.5% (10 respondents), and 2.2% (5 respondents) were recorded for other usage.

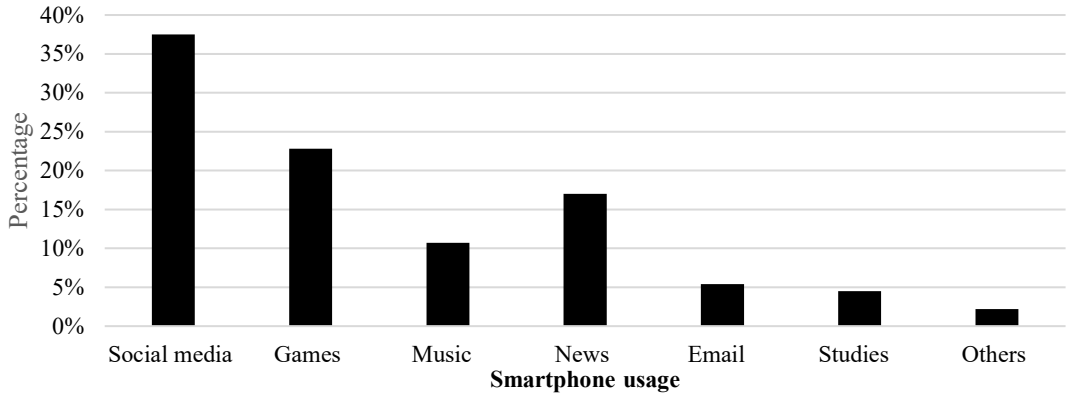

Fig. 1. Smartphone usage

The NMP-Q levels

NMP-Q levels were calculated as proposed by the original (Yildirim & Correia, 2015). As seen in Table 3, 37.9% reported severe levels of nomophobia, significantly higher than in previous studies (Al-Mamun et al., 2023). Based on the outcome, it can be concluded that the respondents of this study had moderate nomophobia, where the highest respondent was 100 (44.6%). These findings necessitate more investigation to examine the causes of this difference. Upon analysing the sub-dimensions of the scale, it was determined that the mean scores obtained from the dimension of giving up convenience (M=3.445, SD=.752), not being able to communicate (M=3.316, SD=.905), losing connection (M=3.279, SD=.955), and not being able to access information (M=3.4297, SD=.86720) were all moderate.

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Table 3. Prevalence of nomophobia among the smartphone Klang Valley users

NMP-Q scores	Description	Frequency (N = 224)	Percentage%
20	Absence	0	0
>20 to <60	Mild	39	17.4%
60 to <100	Moderate	100	44.6%
≥100	Severe	84	37.9%

Additionally, we conducted a series of individual t-tests to examine potential differences in nomophobia symptom scores between female and male individuals. The *p*-value of the test is <0.01, indicating a significant difference with the *t*= 3.495. The independent sample *t*-Test analysis indicates male respondents (M=3.560, SD=0.761) and female respondents (M=3.201, SD=0.764) regarding their nomophobia levels. Accordingly, gender was introduced as a confounder, with male respondents having more tendency to show nomophobia behaviours compared to the female respondents. This finding aligns with Kivrak (2021); it was determined that the mean value of males was statistically more significant than that of females across all dimensions of nomophobia.

Concerning age group, there was a statistically significant difference between Nomophobia levels (F (4, 219) =10.417, p = <0.01). According to Abi-Jaoude et al. (2020), the use of social media has risen dramatically; in the United States, 89 per cent of 13- to 17-year-olds own a smartphone, a figure that has more than doubled over the past six years. Statistically significant changes in nomophobia levels were also observed depending on the hours of daily smartphone usage. According to the analysis result, a significant difference was found between respondents' Nomophobia levels regarding hours spent on smartphones daily (F (3, 220) = 10.259, p = 0.00). This suggests that the amount of time individuals spend on their smartphones correlates with changes in the intensity of nomophobia. However, the findings differ from Al-Mamun et al. (2023), which indicated that using a smartphone for three hours or more daily was linked to a higher severity of nomophobia.

Relationships between nomophobia and personality traits

Multiple regression analyses were performed using SPSS 28 to examine the relationship between personality traits and nomophobia. First, the researcher examined the hypotheses about the relationships between extraversion and nomophobia. H_1 is accepted, indicating that individuals with extraversion personalities are significantly and positively related to the nomophobia behaviour (β = 0.269; p < 0.01). On the other hand, as hypothesised in H_2 and H_3, openness to experience and neuroticism are significantly and positively related to nomophobia (β = 0.328; p < 0.001) and (β = 0.571; p < 0.001). Therefore, H_2 and H_3 is accepted. Surprisingly, agreeableness does not relate to nomophobia (β = -.1.16; p > 0.01). Therefore, H_4 is rejected. As hypothesised in H_5, conscientiousness is significantly and positively related to nomophobia (β = 0.467; p < 0.001). Hence, H_5 is accepted.

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Table 4. Summary Results of Multiple Regression Analysis

Variables	Standard Coefficients	*t*	Sig	Collinearity Statistics	
				Tolerance	VIF
Extroversion	.269	4.424	<0.01	.682	1.467
Openness to experience	.328	5.077	<0.01	.605	1.652
Neuroticism	.571	8.840	<0.01	.605	1.653
Agreeableness	-1.16	-2.2004	.046	.748	1.337
Conscientiousness	0.467	7.120	<0.01	.586	1.705
R^2	0.426				
F	35.740				
Sig. of F Value	0.02				
Durbin Watson	.926				

DISCUSSION

The purpose of the current study is to focus on nomophobia behaviour among smartphone users in Klang Valley, Malaysia. It delineated the condition and correlated it with several factors, including gender, age, marital status, level of education attained at the time of smartphone ownership, daily hours spent using a smartphone, and the most often utilised application.

The first question in this study sought to determine the prevalence of nomophobia. The prevalence of nomophobia among smartphone users in Malaysia was moderate. As to the scoring criteria established by Yildirim and Correia (2015), a score ranging from three to less than five is deemed moderate. The study revealed a mean score of 3.3616, signifying a moderate level of nomophobia. The results of this study align with recent studies. Gunay et al. (2023) indicated that 52.6% of students in Bangladesh demonstrated a moderate degree of nomophobia. Al-Mamun et al. (2023) determined that 56.1% of university students exhibited moderate nomophobia. In contrast, Jahrami et al. (2022) noted that 50% of the population in the UK possessed mobile phones and displayed moderate levels of nomophobia.

This study extensively examined the four factors associated with nomophobia levels: age, smartphone ownership, hours spent using smartphones, and the most utilised application. There was a statistically significant variation in nomophobia scores among age groups. The descriptive analysis indicates that the highest level corresponds to individuals under 20, while the lowest level pertains to those aged 40 to 49. Abi-Jaoude et al. (2020) report a significant increase in social media usage; in the United States, 89 per cent of individuals aged 13 to 17 possess a smartphone, a statistic that has more than doubled in the last six years. Concerning the hours spent using smartphones daily, there were statistically significant differences between nomophobia levels. Based on the analysis, the highest level was less than 1 hour, and the lowest was 1 to 4 hours. This contradicts Al-Mamun et al. (2023), who assert that daily smartphone usage of three hours or more correlates with heightened nomophobia severity.

This research seeks to examine the relationship between personality factors and nomophobia. The data reveal that all personality traits correspond to nomophobia behaviour, except for agreeableness. These findings reinforce the assertion of Amiri and Taghinejad (2022) that individuals with neurotic personalities like written communication eschew in-person encounters and engage in more telephonic talks, resulting in increased nomophobia behaviour.

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CONCLUSION

The primary objective of the present study was to ascertain the prevalence of nomophobia within the Malaysian cultural setting and to assess the relationship between psychological factors and nomophobia. The study's results indicated a statistically significant correlation between certain personality traits and the nomophobia reported by the subjects. This study's concentration on personality qualities as the main factor determining nomophobia could overlook social, technological, and psychological aspects like anxiety and attachment types. Expanding these features may help explain how diverse variables cause nomophobia. The study's sample from Klang Valley indicates that cultural and geographical variables may have influenced the outcomes. Cultural standards, community expectations, and infrastructure may influence people's experiences of nomophobia.

Consequently, the results may not apply to different regions or populations. Extending the research to encompass people from diverse cultural and geographical backgrounds would assist in ascertaining whether these variables affect the correlation between personality traits and nomophobia. Further restrictions arise from the dependence on self-reported data, which may influence response biases and social desirability effects. Participants may have inaccurately portrayed their levels of Nomophobia or personality features, possibly undermining the credibility of the results. Subsequent research may integrate more objective metrics, such as behavioural data, to mitigate this risk.

Future research on nomophobia should include diverse pertinent factors to improve its thoroughness. It encompasses the analysis of the interaction among personality traits, technical aspects such as smartphone addiction, social influences including peer pressure and social comparison, and psychological components including anxiety and fear of missing out (FOMO). Subsequent research should investigate factors affecting personality traits and nomophobia, including culture, age, gender, and smartphone use patterns. Examining the significance of technological breakthroughs is also essential. Comparative research across many countries or cultures would elucidate whether the relationship between personality qualities and nomophobia is universally constant or subject to cultural variations.

In conclusion, the findings obtained offer various important findings into efficacious interventions and policy. Understanding the role of personality traits in smartphone addiction may facilitate the formulation of more effective interventions. Various digital policies might also be introduced. For example, the screen and age limits in technology may also be considered in fostering a healthy lifestyle. This endeavour may intentionally enhance mental health and well-being in a thoroughly modern, progressively interconnected society.

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CONFLICT OF INTEREST STATEMENT

The authors state no conflict of interest in the study. The authors acknowledge that they have not received any financial support for all stages of the study, writing and publication of the paper.

AUTHORS' CONTRIBUTIONS

Nurul Shahmimi formulated the primary research concept, established the theoretical framework, and conducted the research. Sharidatul Akma Abu Seman supervised the study progress, and reconstructed the research concept for article submission.

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